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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/620,807	07/17/2003	Yusuke Tsutsui	492322013300	8454

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EXAMINER

SHERMAN, STEPHEN G

ART UNIT	PAPER NUMBER
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2674

DATE MAILED: 01/23/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

10/620,807

**Applicant(s)**

TSUTSUI ET AL.

**Examiner**

Stephen G. Sherman

**Art Unit**

2674

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 15 December 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 December 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
  - 2) ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

### **DETAILED ACTION**

1. This office action is in response to the amendment files 15 December 2005.  
Claims 1-7 are pending.

### ***Response to Arguments***

2. Applicant's arguments with respect to claims 1-7 have been considered but are moot in view of the new ground(s) of rejection.

### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1 and 7 are rejected under 35 U.S.C. 102(e) as being anticipated by Zavracky et al. (US 2002/0030649).

**Regarding claim 1**, Zavracky et al. disclose a display device displaying a color image made of a plurality of color components, comprising:

a plurality of pixels for each of the color components (Paragraph [0077]. The examiner interprets that since the display is a color display, that the pixels are those of the color components as is well known in the art.); and

a  $\gamma$ -correction voltage switching circuit outputting  $\gamma$ -correction voltages that are generated independently for each of the color components (Figure 15A and Paragraphs [0069] and [00123]-[0126]. The examiner interprets that since the individual colors can be individually gamma corrected and the colors are all independently fed into the RED GREEN BLUE MUX 740 and output as sequential RGB, that the RED GREEN BLUE MUX 740 would have to switch between the three incoming color signals in order to output them sequentially.),

wherein the pixels are configured to sequentially receive  $\gamma$ -corrected display signals for each of the color components for displaying the color image (Figures 15a and 16 and paragraphs [0123]-[0126]. The examiner interprets that since each of the individual colors are input into the RED GREEN BLUE MUX 740 and output as sequential RGB that this would be sequentially receiving  $\gamma$ -corrected display signals since in paragraph [0069] it states that the colors could be individually gamma corrected.).

**Regarding claim 7**, Zavracky et al. disclose a  $\gamma$ -correction method of a display device displaying a color image made of a plurality of color components, comprising:

receiving display signals corresponding to the color components (Figure 15A, display signals are received corresponding to the color components.); and

performing a  $\gamma$ -correction on the display signals independently for each of the color components (Figure 15A and Paragraphs [0069] and [00123]-[0126]. The examiner interprets that since the individual colors can be individually gamma corrected and the colors are all independently fed into the RED GREEN BLUE MUX 740 and output as sequential RGB, that the RED GREEN BLUE MUX 740 would have to switch between the three incoming color signals in order to output them sequentially.); and

sequentially writing the  $\gamma$ -corrected display signals for each of the color components (Figures 15a and 16 and paragraphs [0123]-[0126]. The examiner interprets that since each of the individual colors are input into the RED GREEN BLUE MUX 740 and output as sequential RGB that this would be sequentially writing  $\gamma$ -corrected display signals since in paragraph [0069] it states that the colors could be individually gamma corrected.).

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Zavracky et al. (US 2002/0030649) in view of Bitzakidis (US 5,912,651).

**Regarding claim 2**, Zavracky et al. disclose a display device displaying a color image made of a plurality of color components, comprising:

a plurality of pixels for each of the color components (Paragraph [0077]. The examiner interprets that since the display is a color display, that the pixels are those of the color components as is well known in the art.);

a plurality of DA converters, each of the DA converters outputting a voltage to a predetermined number of the pixels (Figure 15A, item 750); and

a  $\gamma$ -correction voltage switching circuit correcting the voltages outputted to the pixels independently for each of the color components (Figure 15A and Paragraphs [0069] and [00123]-[0126]. The examiner interprets that since the individual colors can be individually gamma corrected and the colors are all independently fed into the RED GREEN BLUE MUX 740 and output as sequential RGB, that the RED GREEN BLUE

MUX 740 would have to switch between the three incoming color signals in order to output them sequentially.); and

sequentially supplying the  $\gamma$ -corrected voltage to one of the set of the predetermined number of the pixels for each of the color components (Figures 15a and 16 and paragraphs [0123]-[0126]. The examiner interprets that since each of the individual colors are input into the RED GREEN BLUE MUX 740 and output as sequential RGB that this would be sequentially supplying  $\gamma$ -corrected display signals since in paragraph [0069] it states that the colors could be individually gamma corrected.).

Zavracky fails to teach of a display device comprising a switching circuit provided for each set of the predetermined number of the pixels, the switching circuit receiving the voltage corrected by the  $\gamma$ -correction voltage switching circuit and outputted by the corresponding DA converter.

Bitzakidis discloses a switching circuit provided for each set of the predetermined number of the pixels, the switching circuit receiving the voltage corrected by the  $\gamma$ -correction voltage switching circuit and outputted by the corresponding DA converter (Figure 2, the switching circuit and timing control circuit 21. The switching circuit when combined with the circuit of Zavracky et al., would receive the voltage from the DACs and supply the voltage to the pixels and receive the timing to control the switches from the timing and control circuit to selectively output the voltages to the corresponding pixels.)

Therefore it would have been obvious to “one of ordinary skill” in the art at the time the invention was made to use the switching circuit as taught by Bitzakidis with the display device taught by Zavracky et al. in order to provide a matrix display system which offers improved display quality when displaying moving images and a method of operating a matrix display system which helps to alleviate the problem of unwanted visual effects when displaying moving images.

6. Claims 3-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zavracky et al. (US 2002/0030649) in view of Bitzakidis (US 5,912,651) and further in view of APA (Figures 6-8 and page 1, line 10 to page 2, line 29 of the specification).

***Regarding claim 3***, Zavracky et al. and Bitzakidis disclose the display device of claim 2.

Zavracky et al. and Bitzakidis fail to teach wherein the DA converter outputting the voltage as a voltage divided by a resistance string between a first reference voltage and the  $\gamma$ -correction voltage switching circuit modifies the first and second reference voltages

APA discloses wherein the DA converter outputting the voltage as a voltage divided by a resistance string (Figure 7, the resistors between Vref(B)) and Vref(W) between a first reference voltage (Figure 7, Vref(B)) and a second reference voltage (Figure 7, Vref(W)) and the  $\gamma$ -correction voltage switching circuit modifies the first and second reference voltages (Page 2, lines 8-13).



Therefore it would have been obvious to “one of ordinary skill” in the art at the time the invention was made to use the DA converter outputting the voltage as taught by the APA with the display device as taught by the combination of Zavracky et al. and Bitzakidis in order to create a display device which can receive positive and negative polarity signals of the different voltages.

**Regarding claim 4**, Zavracky et al. and Bitzakidis disclose the display device of claim 2.

Bitzakidis also discloses the display device further comprising a register storing display signals corresponding to the color components and outputting the display signals in a time sequence corresponding to the time sequence of the switching circuit (Figure 2, the row driver circuit supplies the gate lines the same as the registers and this row driver circuit receives a timing signal from the timing and control circuit 21 which corresponds to the timing signal that was supplied to the switching circuit.).

Zavracky et al. and Bitzakidis fail to teach of the display device further comprising a register provided for each set of the predetermined number of the pixels.

APA also discloses of the display device further comprising a register provided for each set of the predetermined number of the pixels (Figure 6, items 23-1).

Therefore it would have been obvious to “one of ordinary skill” in the art at the time the invention was made to use the registers taught by the APA with the display device taught by the combination of Zavracky et al. and Bitzakidis in order to allow for the storage of the RGB display data.

7. Claims 5-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zavracky et al., (US 2002/0030649) in view of Bitzakidis (US 5,912,651) and further in view of APA and Hong (US 2003/0006952).

**Regarding claim 5**, Zavracky et al., Bitzakidis and APA disclose the display device of claim 3.

APA also discloses the display device wherein the first reference voltage comprises the output voltage of the switching element (Figure 7,  $V_{ref}(B)$ ).

Zavracky et al., Bitzakidis and APA fail to teach of the display device wherein the  $\gamma$ -correction voltage switching circuit comprises a black reference voltage generating circuit outputting three different black reference voltages and a switching element outputting one of the three black reference voltages in response to a selection signal.

Hong discloses the display device wherein the  $\gamma$ -correction voltage switching circuit comprises a black reference voltage generating circuit outputting three different black reference voltages and a switching element outputting one of the three black reference voltages in response to a selection signal (Paragraph [0038], 2<sup>nd</sup> sentence and paragraph [0047], 4<sup>th</sup> sentence. The examiner interprets that since Hong teaches of switching between a black gamma circuit that when combined with the teaching of Zavracky et al., Bitzakidis and APA, the black gamma circuit would contain three different black reference voltages, one for each color, and would selectively switch between them based on the timing and selection signal.).

Therefore it would have been obvious to “one of ordinary skill” in the art at the time the invention was made to use the black reference voltage generating circuit as taught by Hong with the display device taught by the combination of Zavracky et al., Bitzakidis and APA in order to create a display driving apparatus and a method thereof for a wide viewing angle capable of improving the viewing angle by materializing Halftone Grayscale method by means of time division.

**Regarding claim 6**, Zavracky et al., Bitzakidis and APA disclose the display device of claim 3.

APA also discloses the display device wherein the second reference voltage comprises the output voltage of the switching element (Figure 7,  $V_{ref}(W)$ ).

Zavracky et al., Bitzakidis and APA fail to teach of the display device wherein the  $\gamma$ -correction voltage switching circuit comprises a white reference voltage generating circuit outputting three different white reference voltages and a switching element outputting one of the three white reference voltages in response to a selection signal.

Hong discloses the display device wherein the  $\gamma$ -correction voltage switching circuit comprises a white reference voltage generating circuit outputting three different white reference voltages and a switching element outputting one of the three white reference voltages in response to a selection signal (Paragraph [0038], 2<sup>nd</sup> sentence and paragraph [0047], 4<sup>th</sup> sentence. The examiner interprets that since Hong teaches of switching between a white gamma circuit that when combined with the teaching of Zavracky et al., Bitzakidis and APA, the white gamma circuit would contain three

different white reference voltages, one for each color, and would selectively switch between them based on the timing and selection signal.).

Therefore it would have been obvious to "one of ordinary skill" in the art at the time the invention was made to use the black reference voltage generating circuit as taught by Hong with the display device taught by the combination of Zavracky et al., Bitzakidis and APA in order to create a display driving apparatus and a method thereof for a wide viewing angle capable of improving the viewing angle by materializing Halftone Grayscale method by means of time division.

### ***Conclusion***

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

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the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen G. Sherman whose telephone number is (571) 272-2941. The examiner can normally be reached on M-F, 8:00 a.m. - 4:30 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Edouard can be reached on (571) 272-7603. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

SS



PATRICK N. EDOUARD  
SUPERVISORY PATENT EXAMINER

10 January 2006